**Name(s):**

**Revisiting Lab Measurement**

**Materials:** water, 100 mL graduated cylinder, balance, rock samples (smaller than graduated cylinder diameter)

**Procedure:**

1. Use the triple beam balance to determine the mass of your first rock sample. Before placing the rock on the pan, **make sure that all riders are locked into the zero position and the balance is zeroed**. Begin by moving the largest mass 100 g at a time until the balance tips, then proceed using the smaller masses until you determine the exact final mass of the rock sample by adding all of the rider values. You should have 2 digits after the decimal. **Record**.
2. Place some water into your graduated cylinder. Make sure to measure the volume carefully from the **bottom of the meniscus and at eye level**. (It may help to hold a piece of paper behind grad. cyl.)
3. Record this initial water volume
4. Now carefully lower the rock into the cylinder until it is completely submerged. Again read the volume from the bottom of the meniscus and make a good estimate of your final digit. **Record**.
5. Subtract the initial water volume from this final volume to calculate the exact volume of your rock. **Record** this in the data table.
6. For each sample, **divide the mass of the rock by the volume of the rock** to calculate density. Record these values.

**(Data Table on Reverse)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sample #** | **Mass (g)** | **Initial Volume (mL)** | **Final Volume**  **(mL)** | **Volume of the Rock (mL)** | **Density (g/mL)** |
| **1** |  |  |  |  |  |
| **2** |  |  |  |  |  |
| **3** |  |  |  |  |  |
| **4** |  |  |  |  |  |
| **5** |  |  |  |  |  |
| **6** |  |  |  |  |  |
| **7** |  |  |  |  |  |
| **8** |  |  |  |  |  |

**Questions:**

1. In this lab we focused on the accuracy and precision of measurements. Please explain what these terms mean. (\*remember precision has 2 meanings)
2. What does it mean to determine the volume of a sample by “water displacement”?
3. Please explain the term “density” in your own words.
4. You may be wondering, “Why should I care about the density of various rocks?” Briefly research and explain why the subtle density difference between granite and basalt is quite important here on Earth: